

## WHAT IS CLAIMED IS:

1. Stacked variable inductors manufactured by stacking M ( $M \geq 2$ ) metal layers on a semiconductor substrate using CMOS technology, comprising:

5           1 to N inductors continuously connected in serial, wherein each of said inductors is formed on N ( $N \leq M$ ) metal layers that are different each other;

First and second ports each connected to the highest inductor and to the lowest inductor among said 1 to N inductors; and

10           At least one MOSFET,

Wherein one terminal of said at least one MOSFET is connected to one of said first and second ports, and the other one terminal is connected to one of adjacent terminals connected in serial between said 1 to N inductors.

15           2. The stacked variable inductors as claimed in claim 1, wherein said N is equal to or above 2 and below 4.

3. The stacked variable inductors as claimed in claim 1, wherein turns of at least two of said 1 to N inductors are made different each other.

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4. The stacked variable inductors as claimed in claim 1, wherein total inductance of said 1 to N inductors serially connected through ON/OFF of said MOSFET can be made to vary.

5. The stacked variable inductors as claimed in claim 1, wherein each of turns of said 1 to N inductors gradually decreases or increases from the lower position of the substrate to the upper position.

5           6. The stacked variable inductors as claimed in claim 1, wherein said M is not less than 3 and said N is 3, and said MOSFET consists of first MOSFET and second MOSFET,

          One terminal of said first MOSFET being connected to one of said ports, the other terminal being connected to a serially connected terminal  
10   between said first and second inductors,

          One terminal of said second MOSFET being connected to said port to which said first MOSFET is connected, and the other terminal being connected to a serially connected terminal between said second and third inductors.

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7. The stacked variable inductors as claimed in claim 1, wherein said M is not less than 3 and said N is 3, and said MOSFET consists of first MOSFET and second MOSFET,

          One terminal of said first MOSFET being connected to one of said  
20   ports, the other terminal being connected to a serially connected terminal between said first and second inductors,

          One terminal of said second MOSFET being connected to a serially connected terminal between said first and second inductors, the other terminal being connected to a serially connected terminal between said second and  
25   third inductors.

8. The stacked variable inductors as claimed in claim 1, wherein a signal for multi band including at least two bands among 900MHz, 1.5GHz, 1.9GHz, 2.4GHz, and 5.2GHz is input to said stacked variable inductors.

5           9. The stacked variable inductors as claimed in claim 1, wherein said stacked variable inductors operate in an operation frequency not less than 2GHz.